

Small-Diameter Roundwood Kiosk

Construction Information



(Ogden, Utah)

Advantages of using timber in the round form:

- Retains its strength
- Resists warp
- Maintains dimensional stability
- Minimizes processing costs
- Helps offset cost of forest restoration



Building with round logs is not a new concept—our ancestors used large (>10 in.) round logs to build their dwellings. Those structures, however, were labor intensive and an inefficient use of the wood resource. So, what has changed?

Today, structures built from small-diameter (≤ 6 in.) round timbers have new fastening systems and connections and are engineered to meet performance specifications. Through engineering design, trusses made from small-diameter roundwood balance more closely the required wood resource with the required structural performance.



Roundwood structures built nowadays are less labor intensive, provide an efficient use of our wood resource, and still have the equivalent load capacity of the large round timbers used historically.

Construction

Although other wood species can be used, the informational kiosk shown in the photo was built using lodgepole pine. It is approximately 25 ft in diameter; the strength of the structure is provided by the connections. Steel plates (1/4 or 3/8 in.) were placed into slots that were cut into the timbers. The plates were then attached using 5/8-in. steel bolts so that the structure can be taken apart and reassembled.



The trusses connect to the center hub ring with a dowel nut connection. This connection consists of a 3/4-in. rod that threads into a 4-in.-long steel dowel. Two holes were drilled into the end of the truss—a large perpendicular hole for the dowel and a smaller center hole, parallel to the member, for the threaded rod. This kiosk used a variety of connectors, dowel nuts, bolts, and welded plates.



Frame

The frame of this kiosk was made from small-diameter roundwood and consisted of the following:

Section	Pieces	Diameter (in.)	Length (ft)
Top chord of truss	8	6	14
Bottom chord of truss	8	5	13
Web member of truss and cupola	16	5	7
Cupola (dome)	24	5	1
Web member of truss	8	3	2
Top plate of truss	8	6	10
Columns (poles)	8	6	9

Roof and Floor

The roof is shingled with cedar shakes. Structural insulated panels (SIPs) make up the floor and roof. In structural insulated panels, polystyrene is sandwiched between two layers of particleboard. This provides good insulation and simplifies installation. The floor



panels rest on laminated veneer beams. Treated lumber or cedar is used where the structure comes in ground contact. Options include incorporating roundwood into the floor or pouring a concrete floor.

Walls

The walls are 2- by 4-in. boards sheathed with rough-sawn cedar. A summer weather option would be to remove the walls and replace with bracing. Bracing would require 16 pieces that are 5 ft long and 3 in. in diameter.

Load

This kiosk was designed to handle more than 100 lb/ft² of load, which is about 20 ft of fresh snow or 2 ft of solid ice. Reductions in diameter of material are possible when less load is expected or stronger roundwood such as Douglas-fir is used.

Engineering Plans

For information on obtaining engineering plans for a small-diameter roundwood kiosk, please contact

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